

# Neck examination

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# Neck swelling

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- Commonest cause of a swelling in the neck is an enlarged lymph gland
- Commonest causes of enlarged lymph glands are infection and secondary tumor deposits.
- Symptoms such as general malaise, fever and rigors and contact with people with infectious diseases may indicate an infective cause of the swelling.
- Loss of appetite, loss of weight, pulmonary, alimentary or skeletal symptoms may suggest the site of a neoplasm.
- Irritation of the skin associated with enlarged cervical lymph glands is often seen with lymphoma.

# Head and neck symptoms

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- Ask about: pain in the mouth, sore throats or ulceration; nasal discharge, pain or blockage of the airway; pain in the throat, dysphagia, changes in the voice and difficulty with breathing; and lumps or ulcers on the skin of the head and face that have changed size or begun to bleed.
- The skin, mouth, nose, larynx and pharynx are common sites for neoplasms, and although head and neck

cancers commonly present with metastases in lymph glands, they are not usually associated with the symptoms of distant metastases such as general malaise and loss of weight.

## The examination of swellings in the neck

### Site

### Relation to muscles

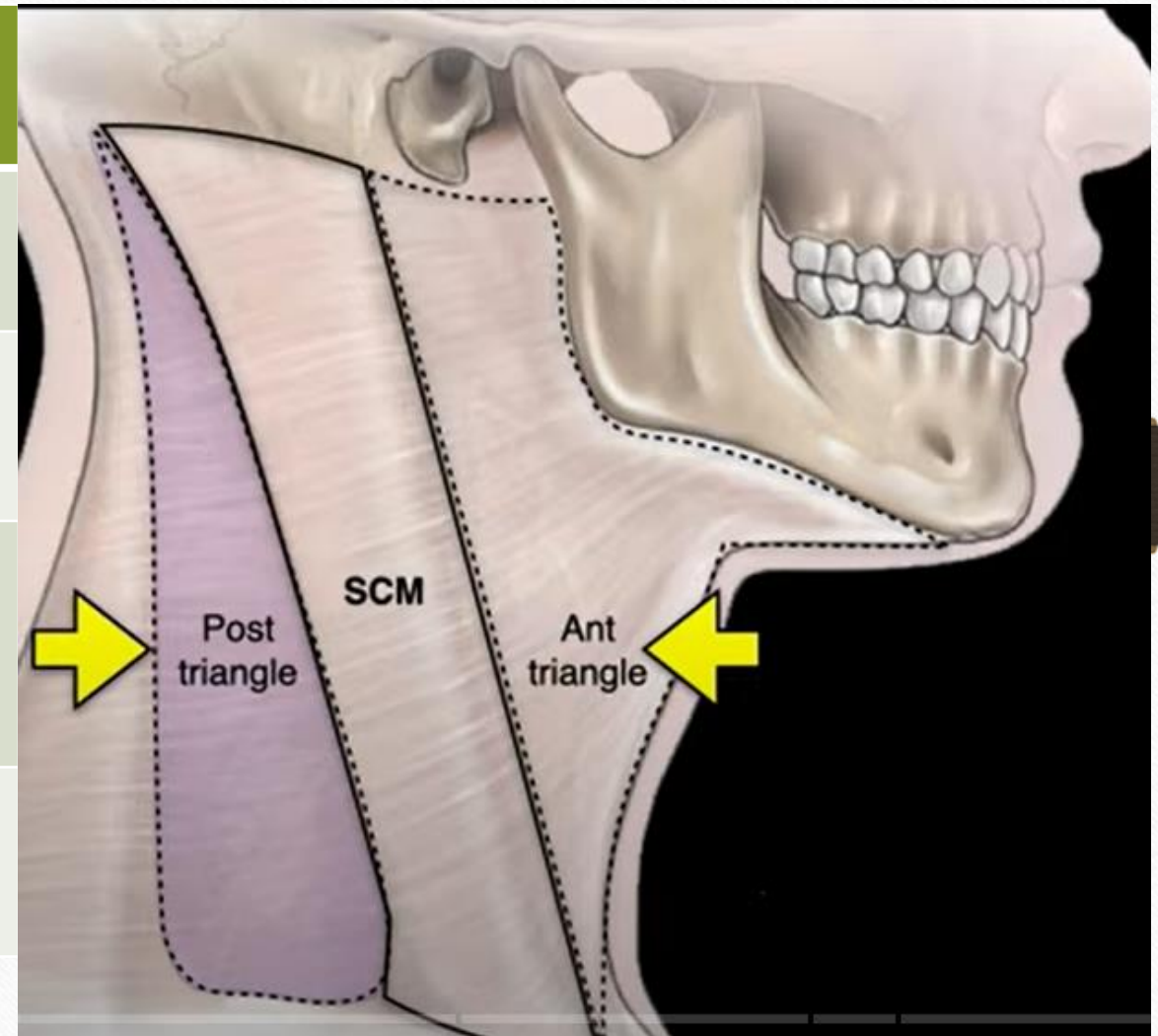
Always feel lumps in the neck with the muscles relaxed and then with them contracted.

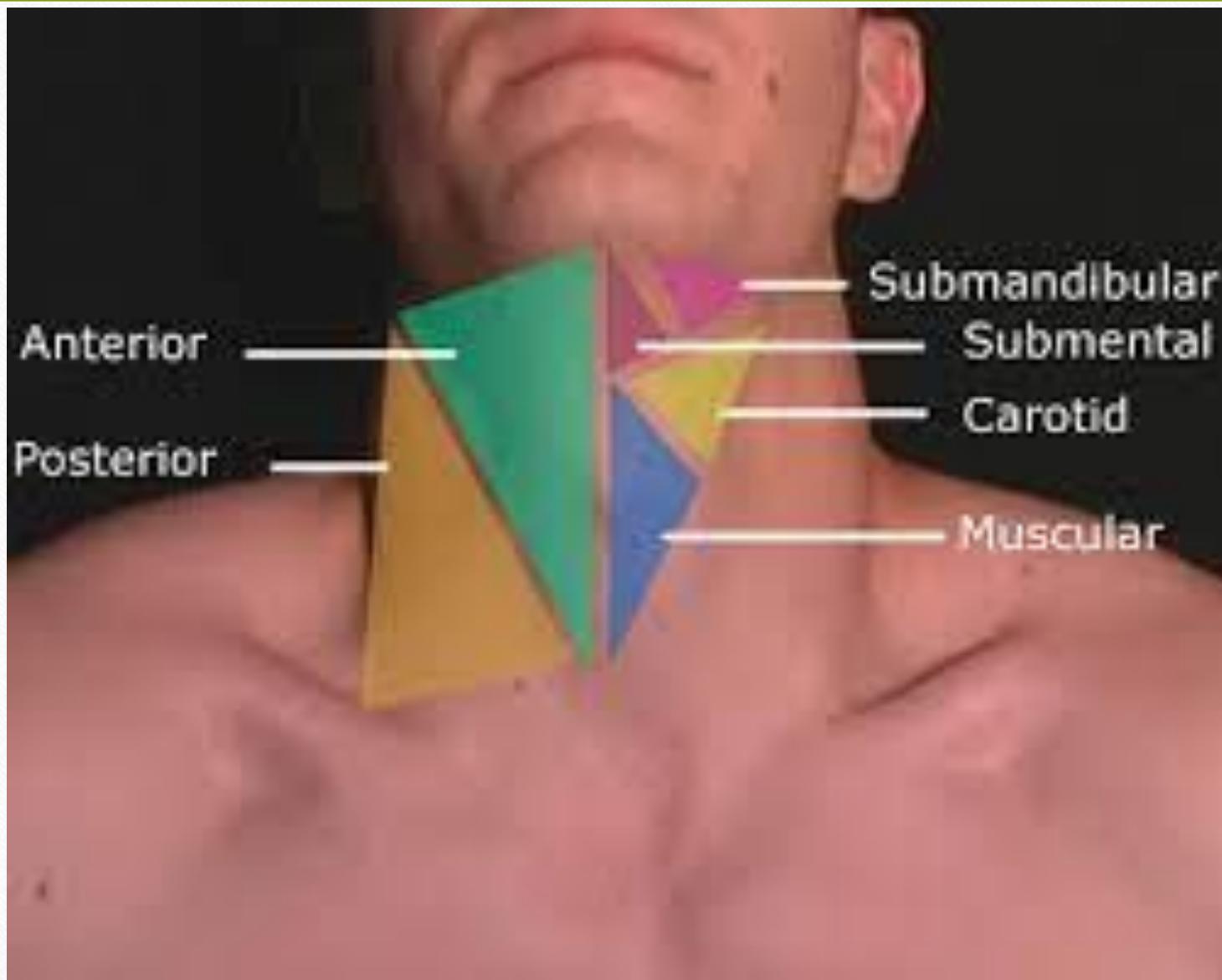
### Relation to the trachea

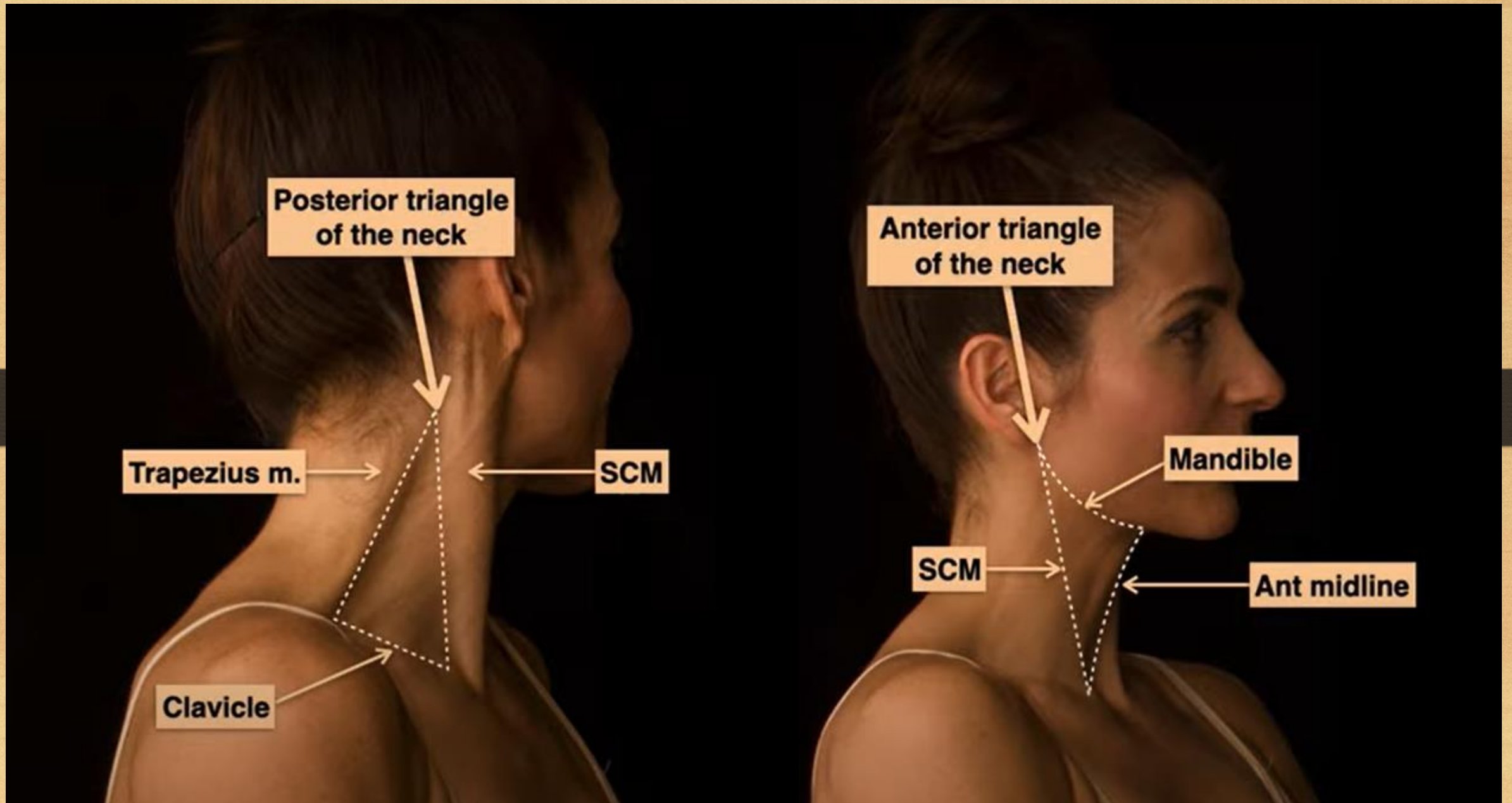
Assess the relationship to the trachea of every lump in the neck by watching to see if it moves with the trachea during swallowing.

### Relation to the hyoid bone

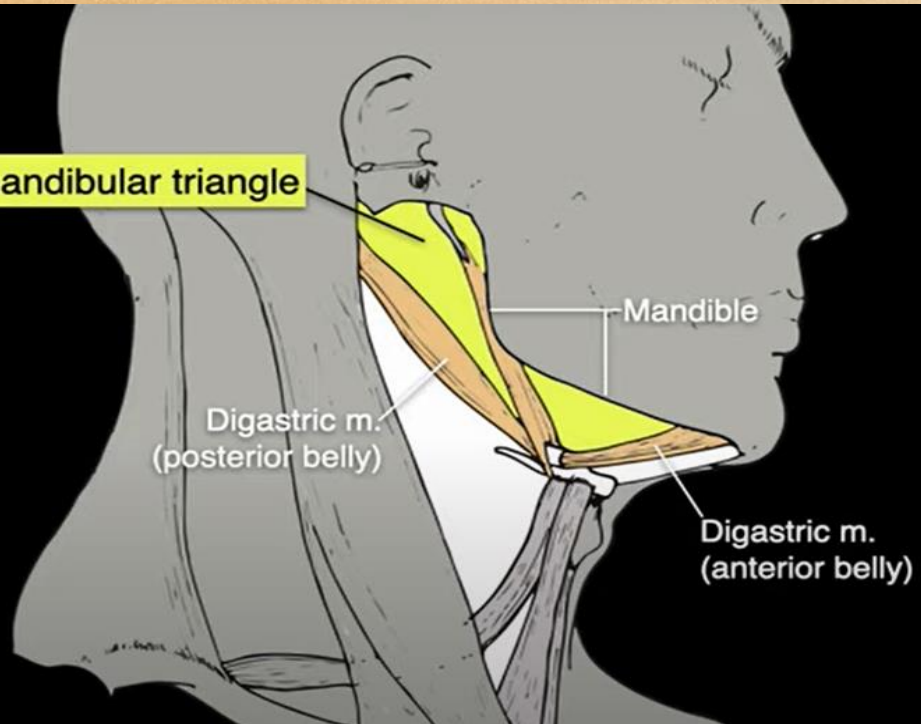
If the swelling in the neck moves as the tongue protrudes, it must be fixed to the hyoid bone.



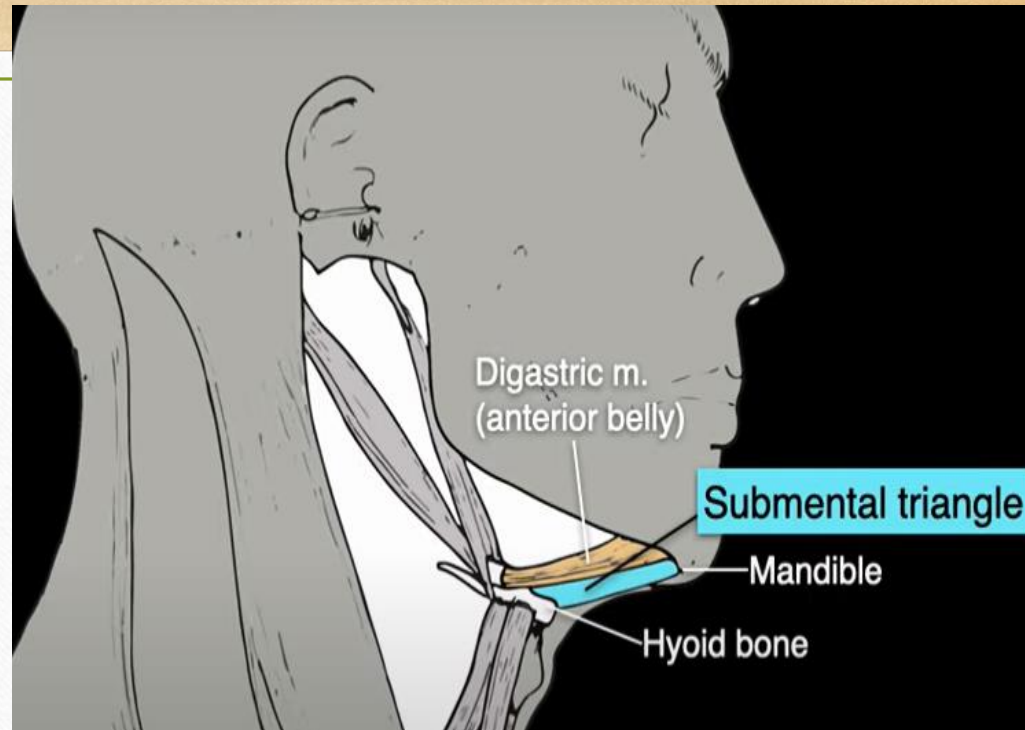




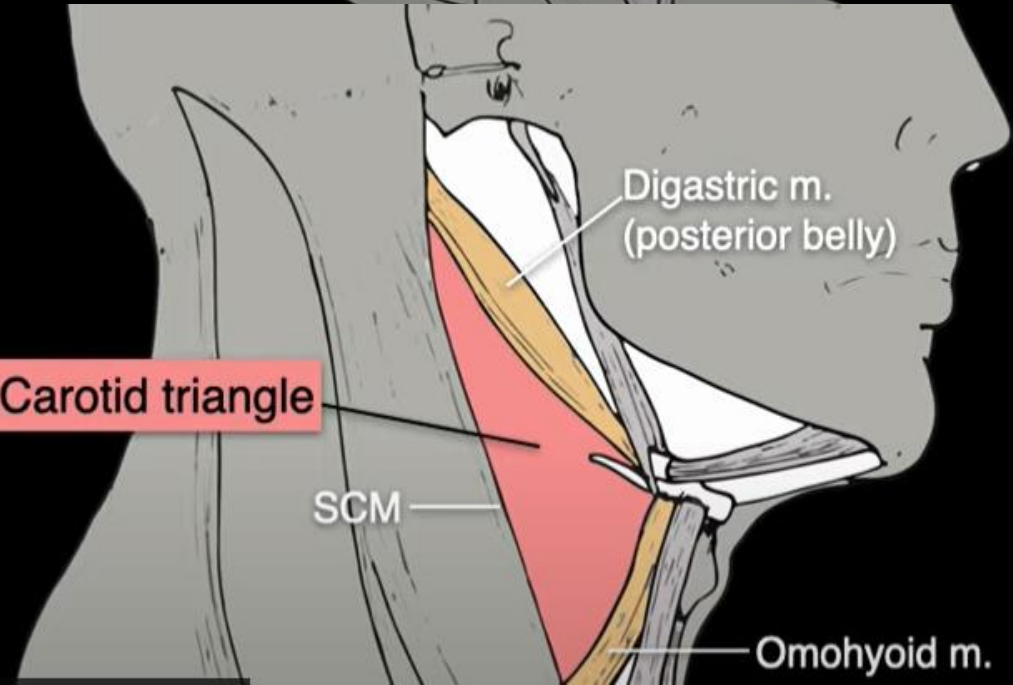
**Submandibular triangle**



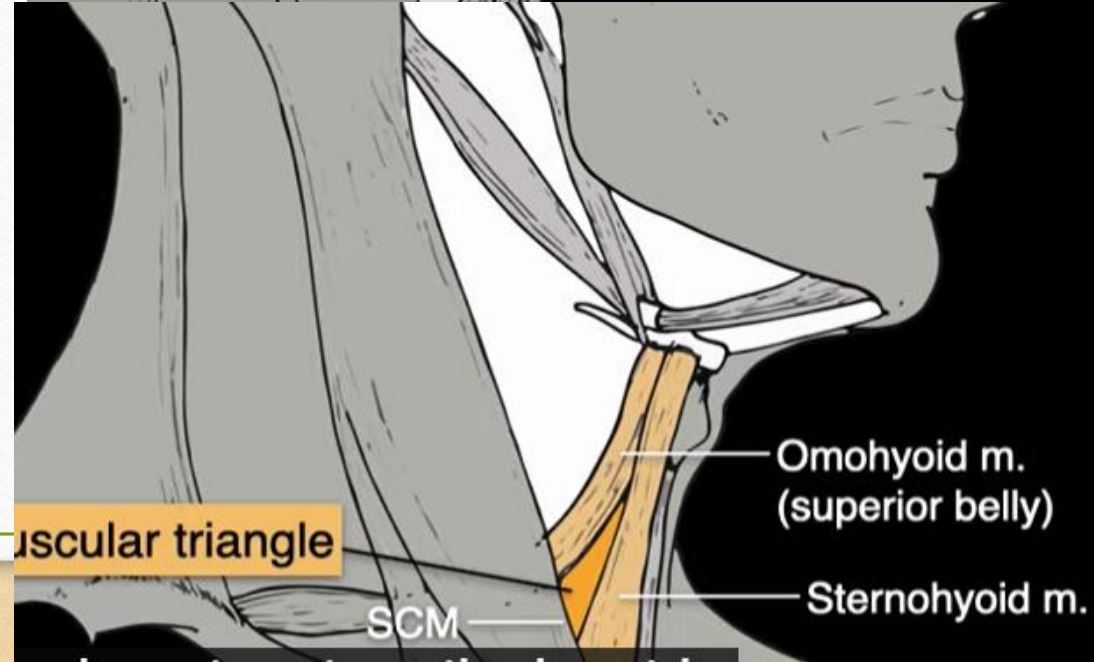
**Submental triangle**

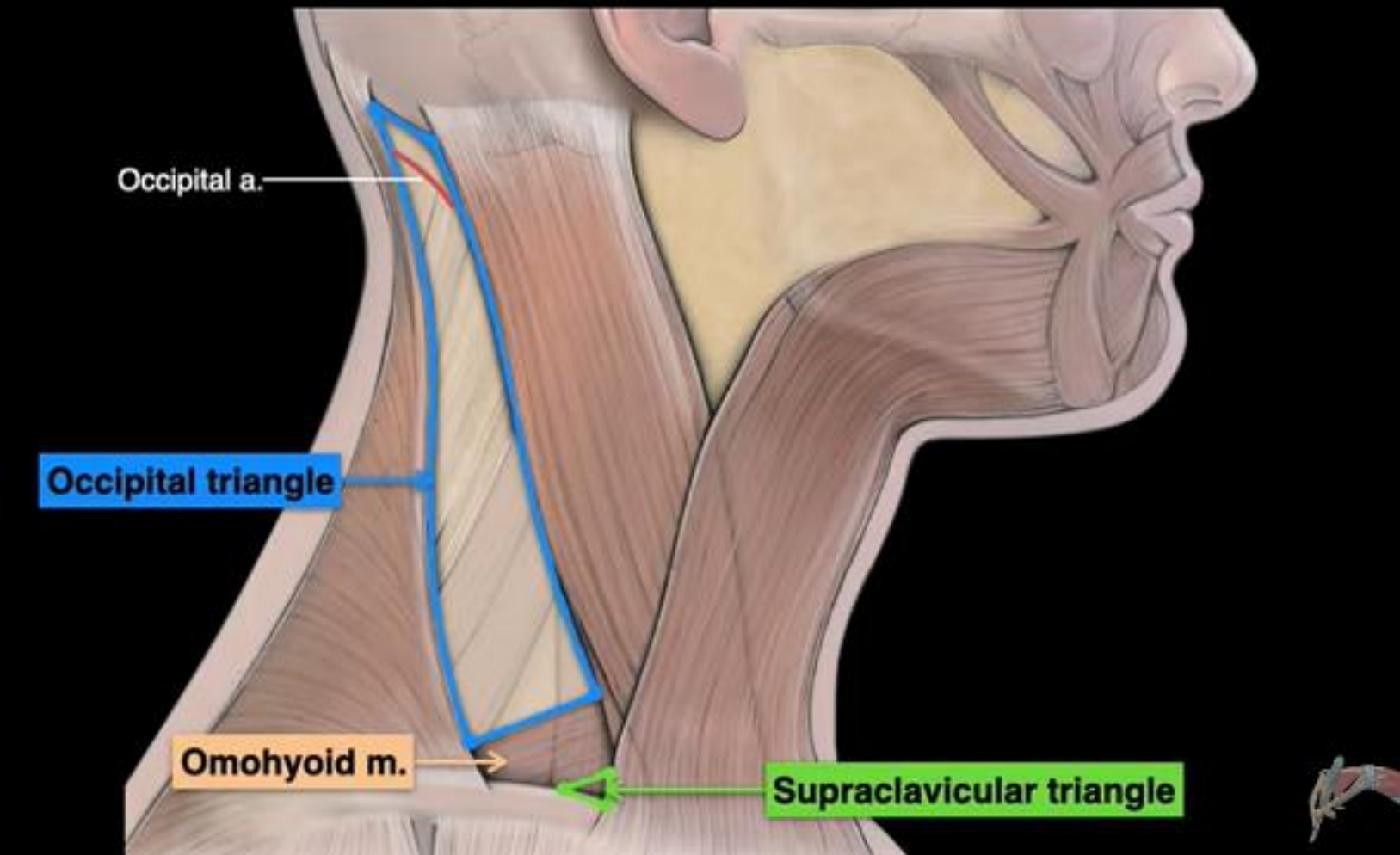


**Carotid triangle**

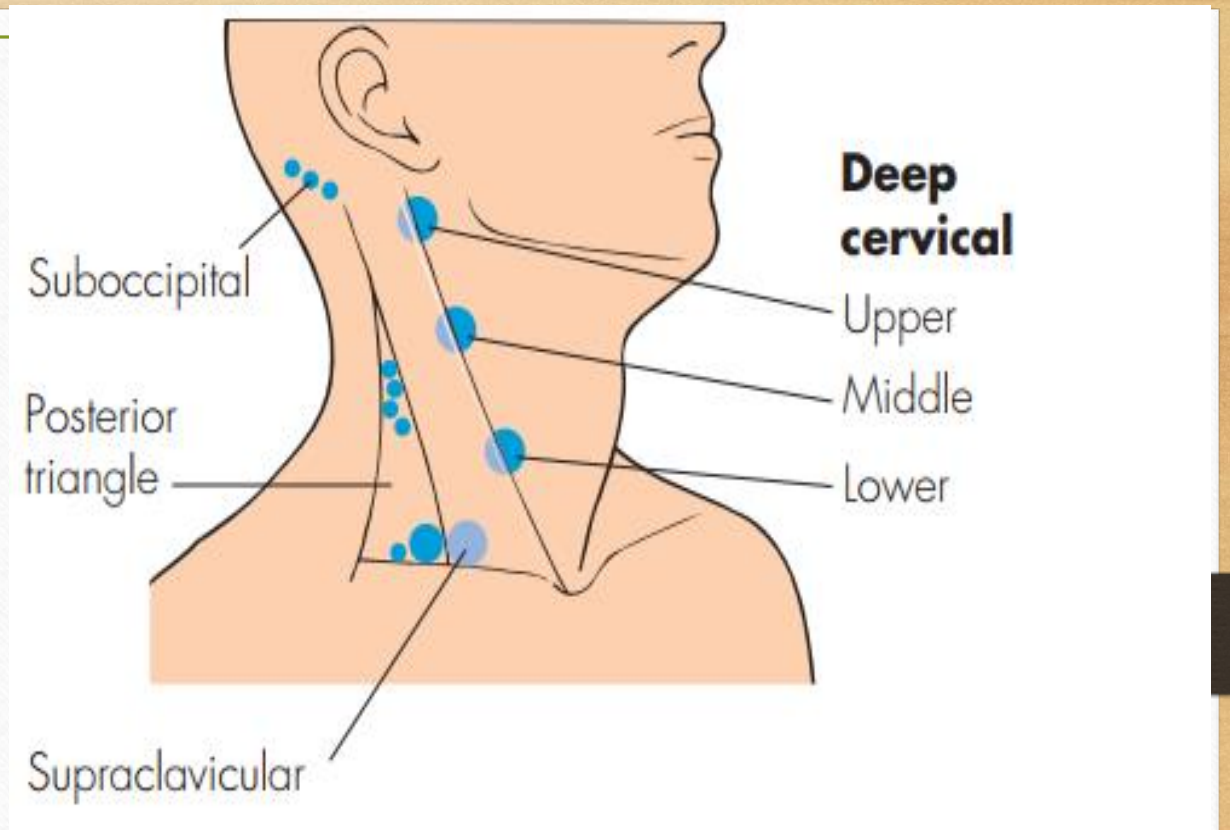
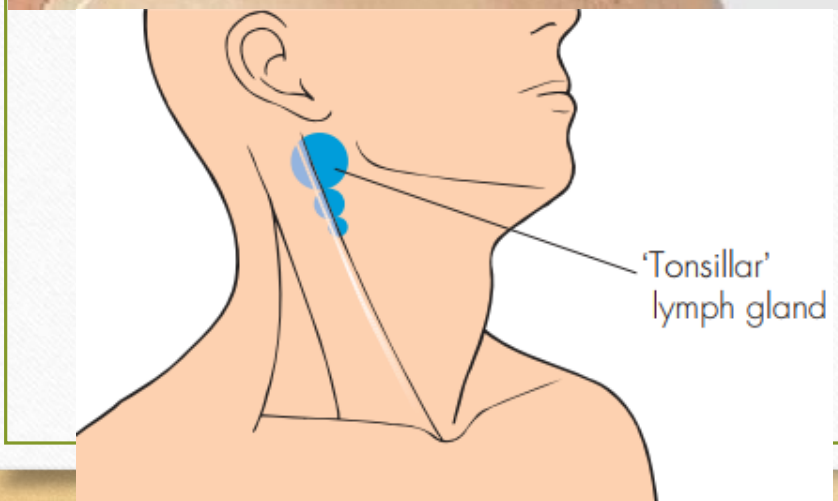
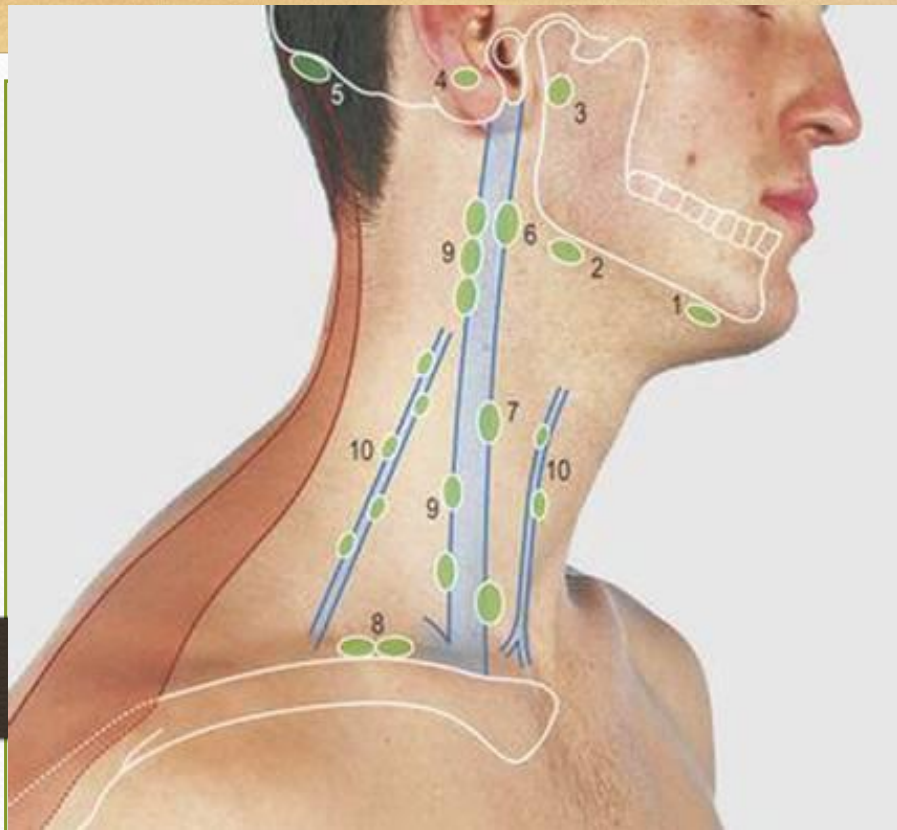


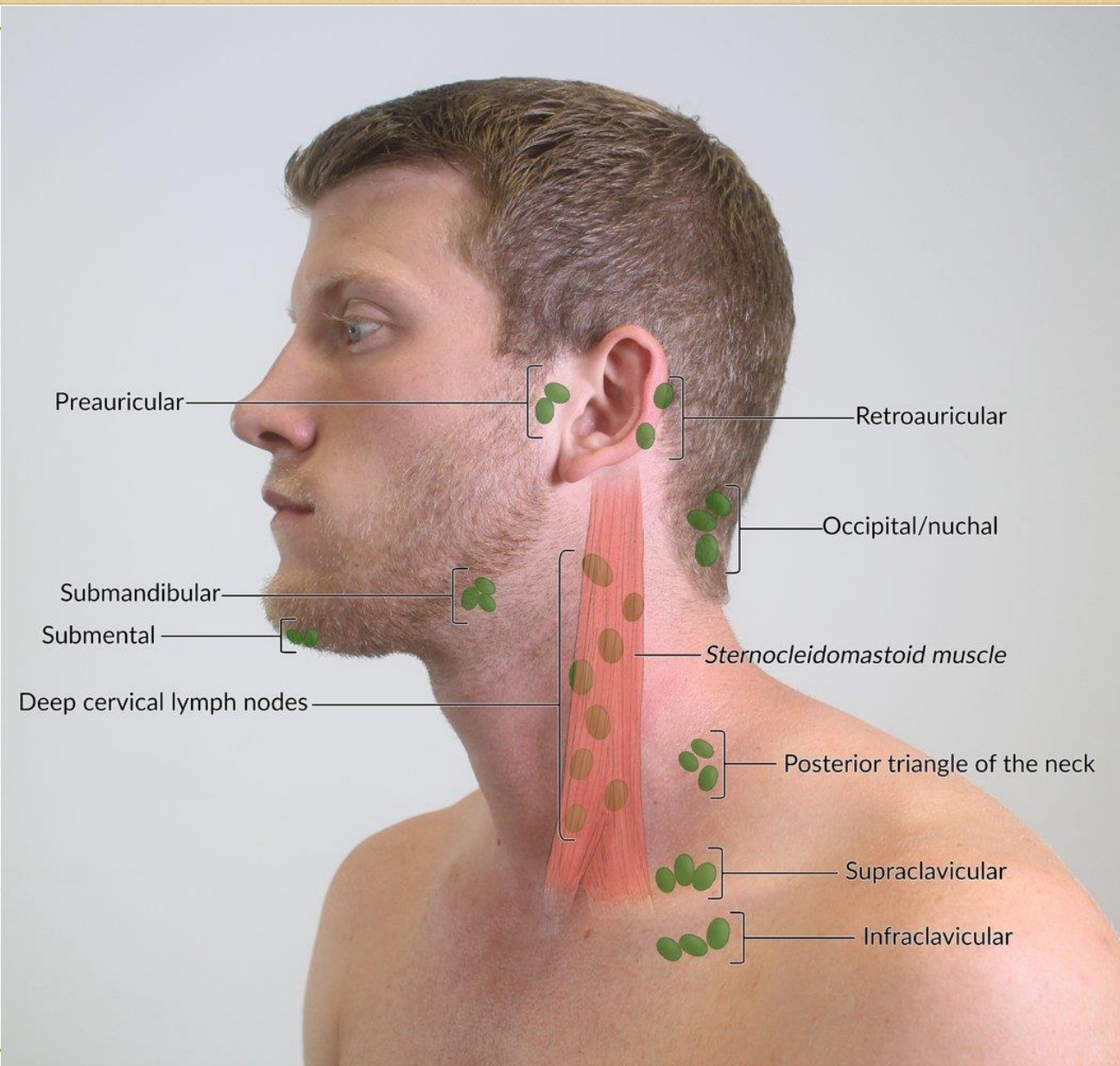
**Muscular triangle**











## **Causes of cervical lymphadenopathy**

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### **Infection**

- Non-specific
- Glandular fever
- Tuberculosis
- Syphilis
- Toxoplasmosis
- Cat-scratch fever (*Rochalimaea henselae*)

### **Metastatic tumour**

- From head, neck, chest and abdomen

### **Primary reticuloses**

- Lymphoma
- Lymphosarcoma
- Reticulosarcoma

### **Sarcoidosis**

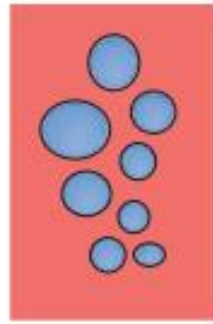
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- *Position* Lymph from the tonsils drains to the upper deep cervical lymph glands. The gland just below and deep to the angle of the mandible is often called the **tonsillar gland**. This gland and those just below it are likely to be enlarged.
  - *Tenderness* If the infection is active, the enlarged glands will be tender.
  - *Shape and size* The tonsillar gland is usually spherical and approximately 1–2 cm in diameter. It is rarely bigger than this. The glands below it are usually smaller, even when inflamed.
  - *Composition and relations* Each gland is firm in consistence, solid and discrete, not fixed but not very mobile.
  - *Local tissues* The tonsils are likely to be enlarged and hyperaemic. Pus may be seen exuding from the surface crypts.
  - The glands on the other side of the neck are often just as large but may not have been noticed by the parents.
  - *General examination* Look for the presence of enlarged lymph glands elsewhere. None should be enlarged.
  - Recurrent chest infections may have damaged the lungs – look for collapsed lobes, bronchiectasis and lung abscess. However, these are rare complications nowadays.



Enlarged discrete glands



A large tuberculous 'collar-stud' abscess.



'Matted' glands



Abscess forms in the centre of the glands

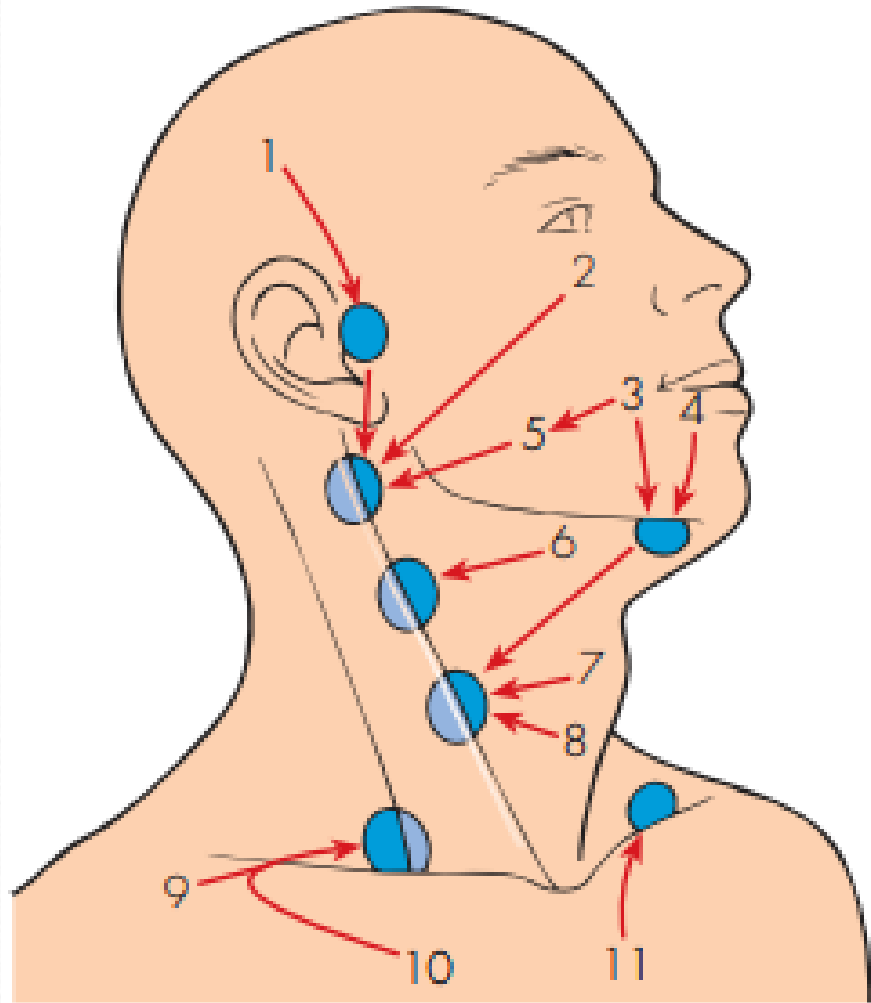


Abscess bursts through the deep fascia and becomes 'collar-stud' in shape

The development of a 'collar-stud' abscess.



## Sites of primary neoplasms that metastasize to the cervical lymph glands



1. Scalp (sometimes via the preauricular node)  
Parotid gland  
Upper face  
Ear
2. Maxillary antrum and other air sinuses  
Nasal cavity and nasopharynx
3. Tongue  
Buccal mucosa  
Floor of mouth  
Mandible
4. Lips
5. Tonsil  
Base of tongue  
Oropharynx
6. Submandibular gland  
Skin of neck
7. Larynx and laryngopharynx
8. Thyroid  
Upper oesophagus
9. Upper limb and both sides of the chest wall
10. Breast
11. Lungs, stomach and all the viscera

## **Plan of examination for source of secondary cervical lymphadenopathy**

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(Start at the top and work downwards.)

Examine the **skin** of the scalp, face, ears and neck.

Look in the **nose**.

Look in the **mouth** at the tongue, gums, mucosa and tonsils.

Palpate the parotid, submandibular and thyroid glands.

Examine the arms and the chest wall – including the breast.

Examine the abdomen and genitalia.

Transilluminate the air sinuses.

Examine the nasopharynx and larynx with mirrors.

# Branchial cyst

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- Branchial cleft anomalies form due to the incomplete involution of branchial cleft structures. Around the fourth week of gestation.
- The most common type of branchial cleft cyst arises from the second cleft
- Branchial cleft anomalies present in one of three forms: cysts, sinuses, or fistulae.
- Cysts have an epithelial lining without external openings, and as such, may be asymptomatic and only noticed incidentally. Such cysts may not present until adulthood.
- Sinus tracts may communicate either externally with skin as a visible punctum or internally with the pharynx or larynx, where the punctate opening will be visible only on endoscopy.
- Branchial cleft fistulae are true communications connecting the pharynx or larynx with the external skin.



# History

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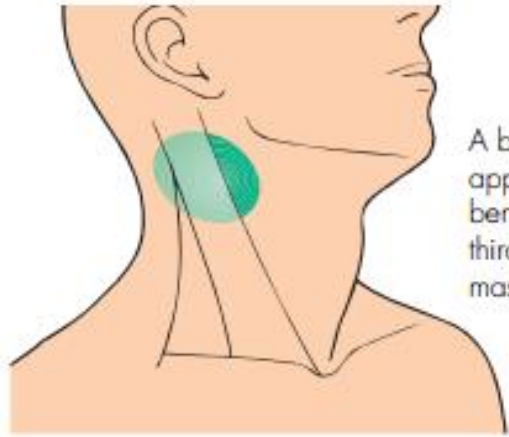
- **Age** Although these cysts are present at birth, they may not distend and cause symptoms until adult life. The majority present between the ages of 15 and 25 years, but a number appear in the 40s and 50s.
- **Sex** Males and females are equally affected.
- **Symptoms** The common presenting complaint is a **painless swelling** in the upper lateral part of the neck.
- The lump may be painful when it first appears and later cause attacks of pain associated with an increase in the size of the swelling. The pain is usually caused by infection in the lymphoid tissue in the cyst wall.
- A severe throbbing pain, exacerbated by moving the neck and opening the mouth, develops if the contents of the cyst become infected and purulent.
- **General effects** These cysts have no systemic effects and are not associated with any other congenital abnormality

# Examination

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- *Position* A branchial cyst lies behind the anterior edge of the upper third of the sternomastoid muscle, and bulges forwards. Very rarely, the cyst can bulge backwards behind the muscle.
- *Color and tenderness* The overlying skin may be reddened and the lump may be tender if the cyst is inflamed.
- *Shape* The cyst is usually ovoid, with its long axis running forwards and downwards.
- *Size* Most branchial cysts are between 5 and 10 cm long.
- *Surface* Their surface is smooth and the edge distinct.
- *Composition* The consistence varies with the tension of the cyst. Most cysts are hard, but a lax cyst feels soft. They are dull to percussion.
- The lump **fluctuates**. This sign is not always easy to elicit, especially if the cyst is small and the sternomastoid muscle thick.
- The lump is usually **opaque** because it contains desquamated epithelial cells that make its contents thick and white. Sometimes the fluid is golden yellow and shimmers with fat globules and cholesterol crystals secreted by the sebaceous glands in the epithelial lining. Such cysts may transilluminate.
- The cyst cannot be reduced or compressed.

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- *Relations* It is important to ascertain that the bulk of the mass is deep to the upper part of the sternomastoid muscle. It is not very mobile because it is closely tethered to the surrounding structures.
  - *Lymph drainage* The local deep cervical lymph glands should not be enlarged. If they are palpable, you should reconsider your diagnosis in Favor of an inflammatory process such as a tuberculous abscess rather than a branchial cyst. The other cystic lesions that are often operated upon as presumed branchial cysts are often secondary cystic lymph gland deposits from a papillary carcinoma of the thyroid.
  - *Local tissues* The local tissues should be normal.
  - If the cyst has turned into an abscess, the surrounding tissues will be edematous and the skin hot and red



A branchial cyst appears from beneath the upper third of the sternomastoid muscle

**FIG 11.12** The site of a branchial cyst.



# Carotid body tumor

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- This is a rare tumor of the chemoreceptor tissue in the carotid body. It is therefore a **chemodectoma**. It is usually benign, but can become quite large and, occasionally, malignant.
- **History**
- *Age* Chemodectomata commonly appear in patients between the ages of 40 and 60 years.
- *Symptoms* The common presentation is a **painless, slowly growing lump**. The patient may notice that the lump pulsates, and may also suffer from symptoms of **transient cerebral ischaemia** (blackouts, transient paralysis or paraesthesia). These symptoms are unusual because the increasing compression of
  - the carotid artery by the tumour is a very slow process.
- *Development* The lump grows so slowly that many patients ignore it for many years.
- *Multiplicity* Carotid body tumours may be bilateral.

# Examination

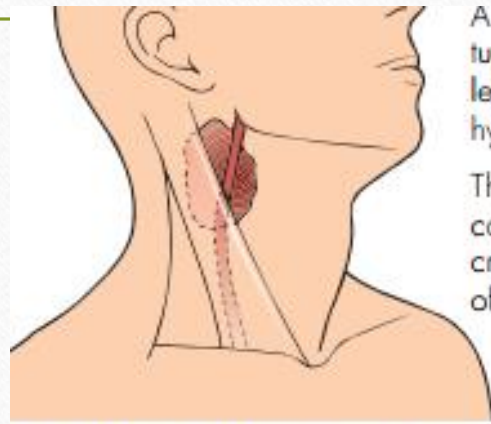
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- Always be especially gentle when palpating a lump close to the bifurcation of the carotid artery. Pressure in this area can induce a vasovagal attack.
- *Position* The carotid bifurcation is at, or just below, the level of the hyoid bone. Carotid body tumors
- A carotid body tumor should be level with the hyoid cartilage
- The external carotid artery may cross the surface of the tumor

## Cervical lymphadenopathy and other neck swellings

- are therefore found in the upper part of the anterior triangle of the neck, level with the hyoid bone and beneath the anterior edge of the sternomastoid muscle.
- *Tenderness, color and temperature* These tumors are not tender or hot, and the overlying skin should be normal.
- *Shape* The lump is initially spherical but, as it grows, it becomes irregular in shape, often narrower at its lower end, where it is caught at the bifurcation of the common carotid artery.

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- *Size* Carotid body tumors may vary from 2–3 cm to 10 cm in diameter.
  - *Composition* The majority of these tumors are **solid** and **hard**. They are dull to percussion and do not fluctuate. They are often called **potato tumors** because of their consistence and shape.
  - Sometimes these tumors **pulsate**. This is either a transmitted pulsation from the adjacent carotid artery, or a palpable external carotid artery running over the superficial aspect of the lump, or a true expansile pulsation from a soft or very vascular tumor.
  - It is surprising that in spite of their vascularity most of these tumors are hard. Those which are soft and very vascular not only have an expansile pulsation, but can also be **compressed**.
  - *Relations* The lump is deep to the cervical fascia and beneath the anterior edge of the sternomastoid muscle.
  - The common carotid artery can be felt below the mass, and the external carotid artery may pass over its superficial surface. Without this close relationship to the arteries, this tumor is indistinguishable from an enlarged lymph gland.
  - Because of their intimate relationship with the carotid arteries, these tumors can be moved from side to side but not up and down.



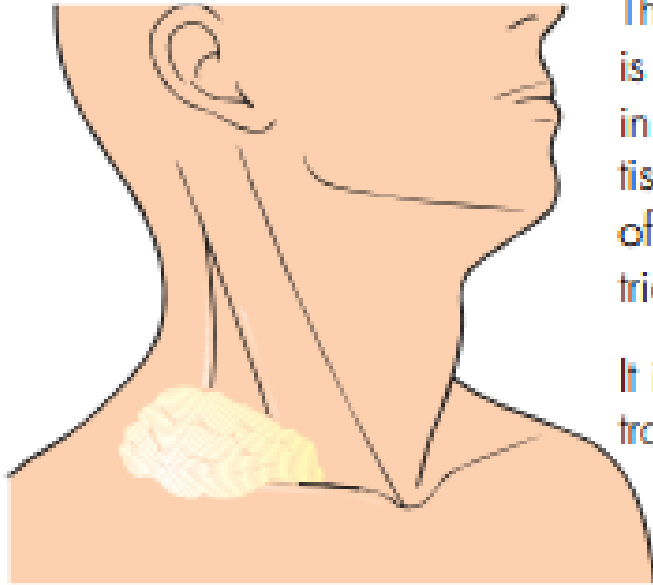
A carotid body tumour should be level with the hyoid cartilage

The external carotid artery may cross the surface of the tumour

**FIG 11.15** The site of a carotid body tumour.







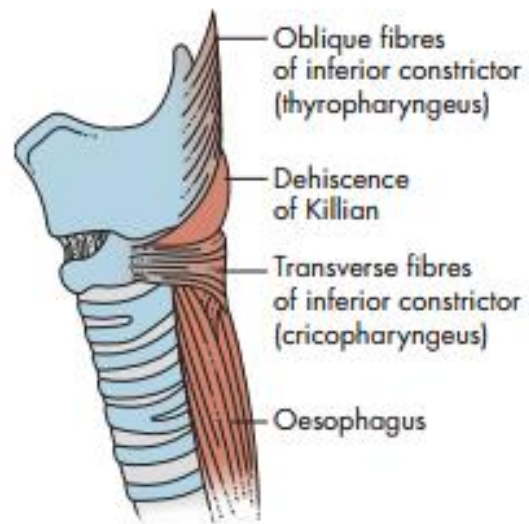
The cystic hygroma is commonly found in the subcutaneous tissues at the base of the posterior triangle

It is brilliantly translucent

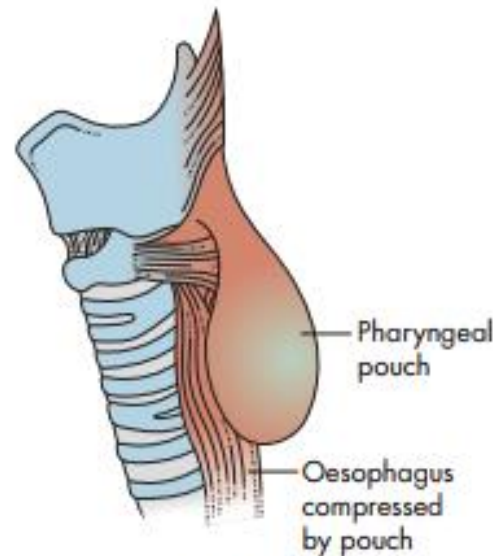
**FIG 11.18** The site of a cystic hygroma.



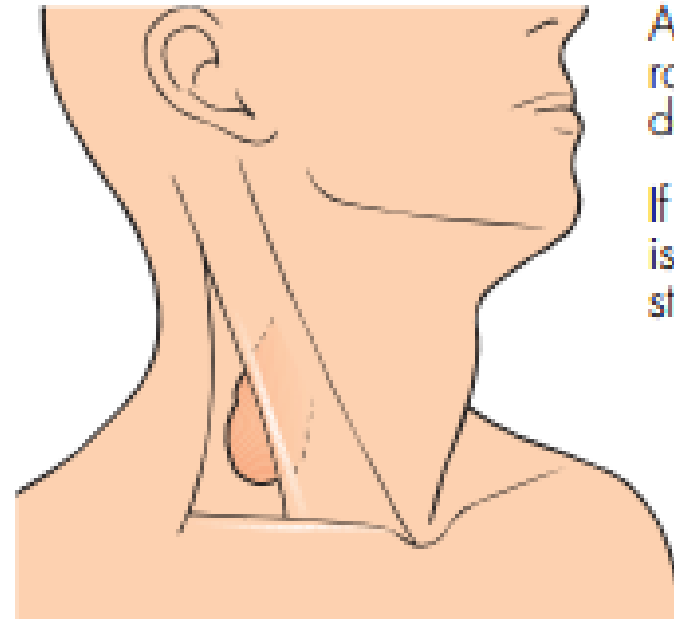
**FIG 11.19** TWO EXAMPLES OF CYSTIC HYGROMA. In a very young child – the common age of presentation, and in a young adult.



**Normal**



**Pouch**

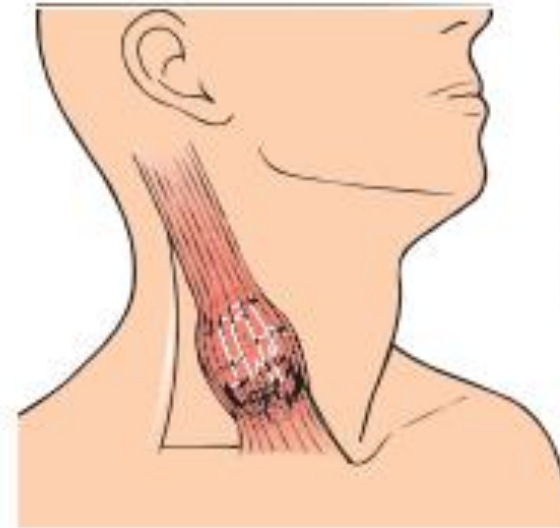


A pharyngeal pouch rarely causes a detectable swelling

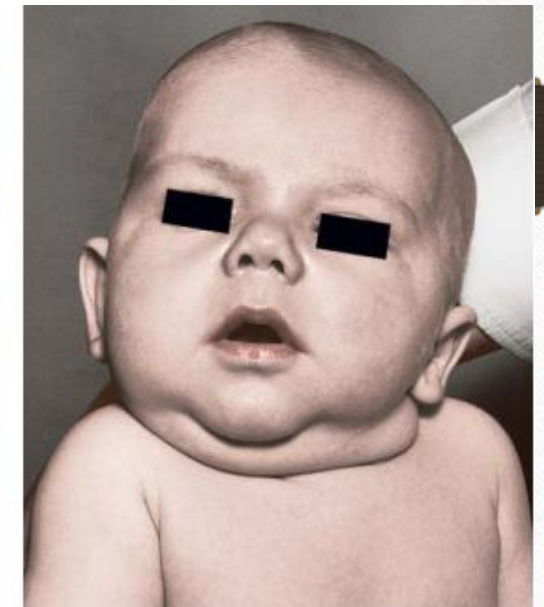
If it does, the swelling is behind the sternomastoid muscle



**FIG 11.26** An adult form of torticollis caused by muscular spasm.



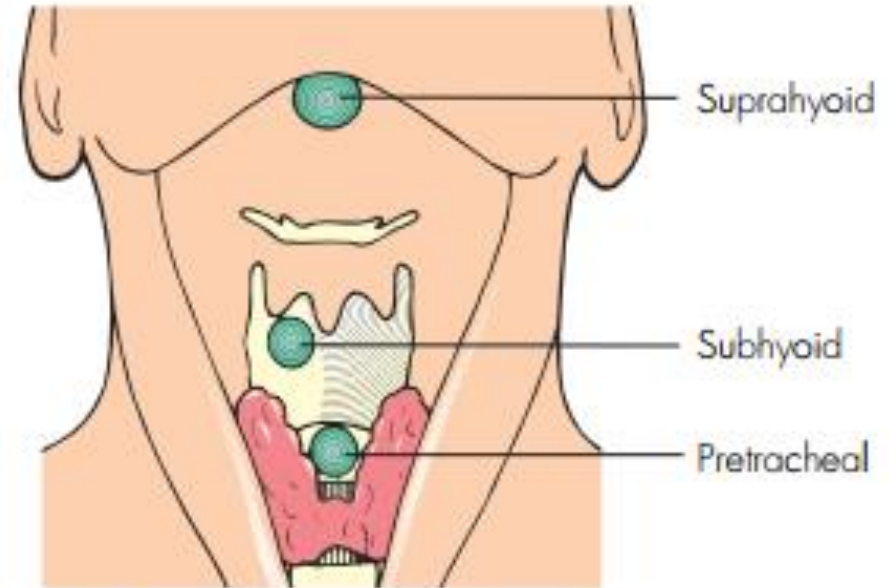
A 'sternomastoid tumour' is an area of oedema and necrosis in the lower third of the sternomastoid muscle



**FIG 11.25** An infantile torticollis caused by ischaemia of the sternomastoid muscle.

## Thyroglossal cyst

- The thyroid gland develops from the lower portion of the thyroglossal duct, which begins at the foramen caecum at the base of the tongue and passes down to the pyramidal lobe of the isthmus of the thyroid gland. If a portion of this duct remains patent, it can form a thyroglossal cyst.



**FIG 11.29** The sites of a thyroglossal cyst.

- **History**
- **Age** Thyroglossal cysts appear at any age, but the majority are seen in patients between 15 and 30 years old.
- **Sex** They are more common in women than in men.
- **Symptoms** The commonest symptom is a **painless lump** in a prominent and noticeable part of the neck. **Pain, tenderness** and an **increase in size** occur only if the cyst becomes infected.
- **Duration of symptoms** The lump may have been present for many years before an increase in its size causes the patient to complain.
- **Systemic symptoms** There are no systemic symptoms associated with this condition.



Pretracheal cyst.

## **A scheme for the diagnosis of swellings in the neck (deep to the deep fascia)**

After your examination you should be able to answer four critical questions:

1. Is there one or more than one lump?
2. Where is the lump?
3. Is it solid or cystic?
4. Does it move with swallowing?

**Multiple lumps** are invariably *lymph glands*

### **A single lump**

*In the anterior triangle that does not move with swallowing*

**Solid:**

- a lymph gland
- carotid body tumour

**Cystic:**

- cold abscess
- branchial cyst

*In the posterior triangle that does not move with swallowing*

**Solid:**

- a lymph gland

**Cystic:**

- cystic hygroma
- pharyngeal pouch
- occasionally a secondary deposit of a papillary thyroid carcinoma

**Pulsatile:**

- subclavian aneurysm

*In the anterior triangle that moves with swallowing*

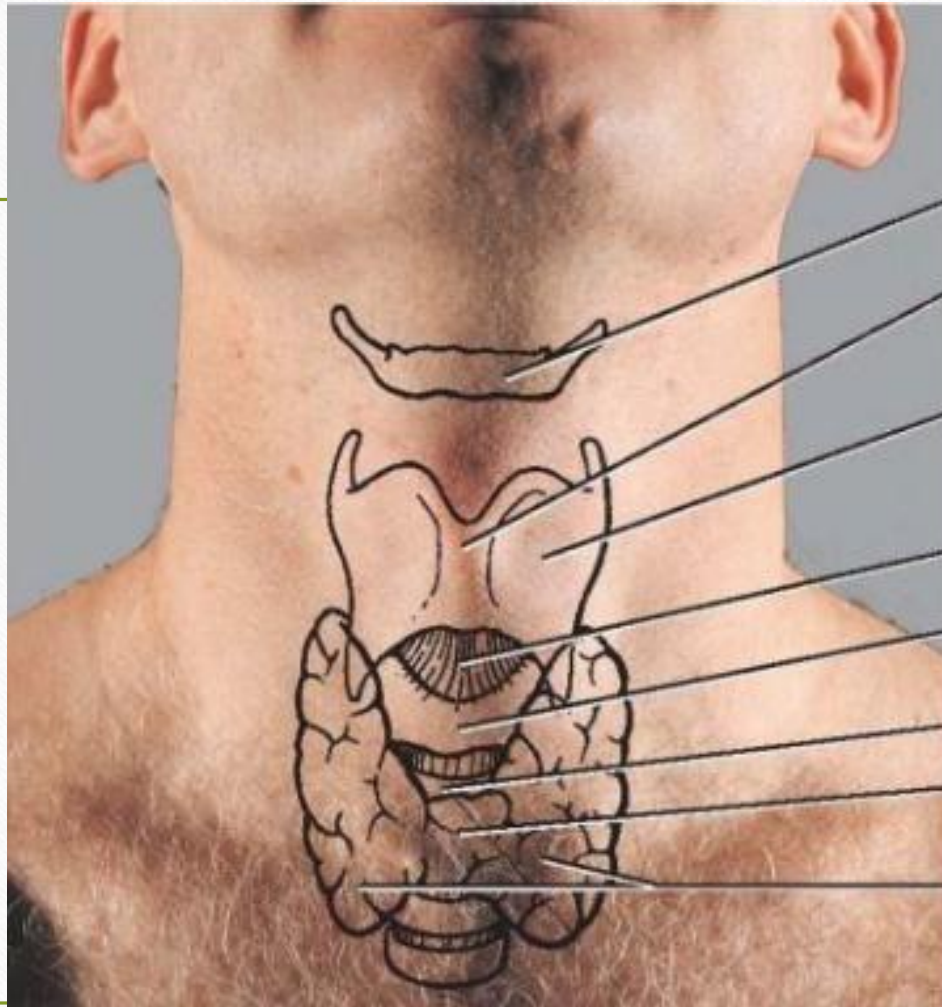
**Solid:**

- thyroid gland
- thyroid isthmus lymph gland

**Cystic:**

- thyroglossal cyst

# Surface Anatomy of Thyroid Gland



Hyoid bone

Laryngeal  
prominence

Lamina of thyroid  
cartilage

Cricothyroid ligament

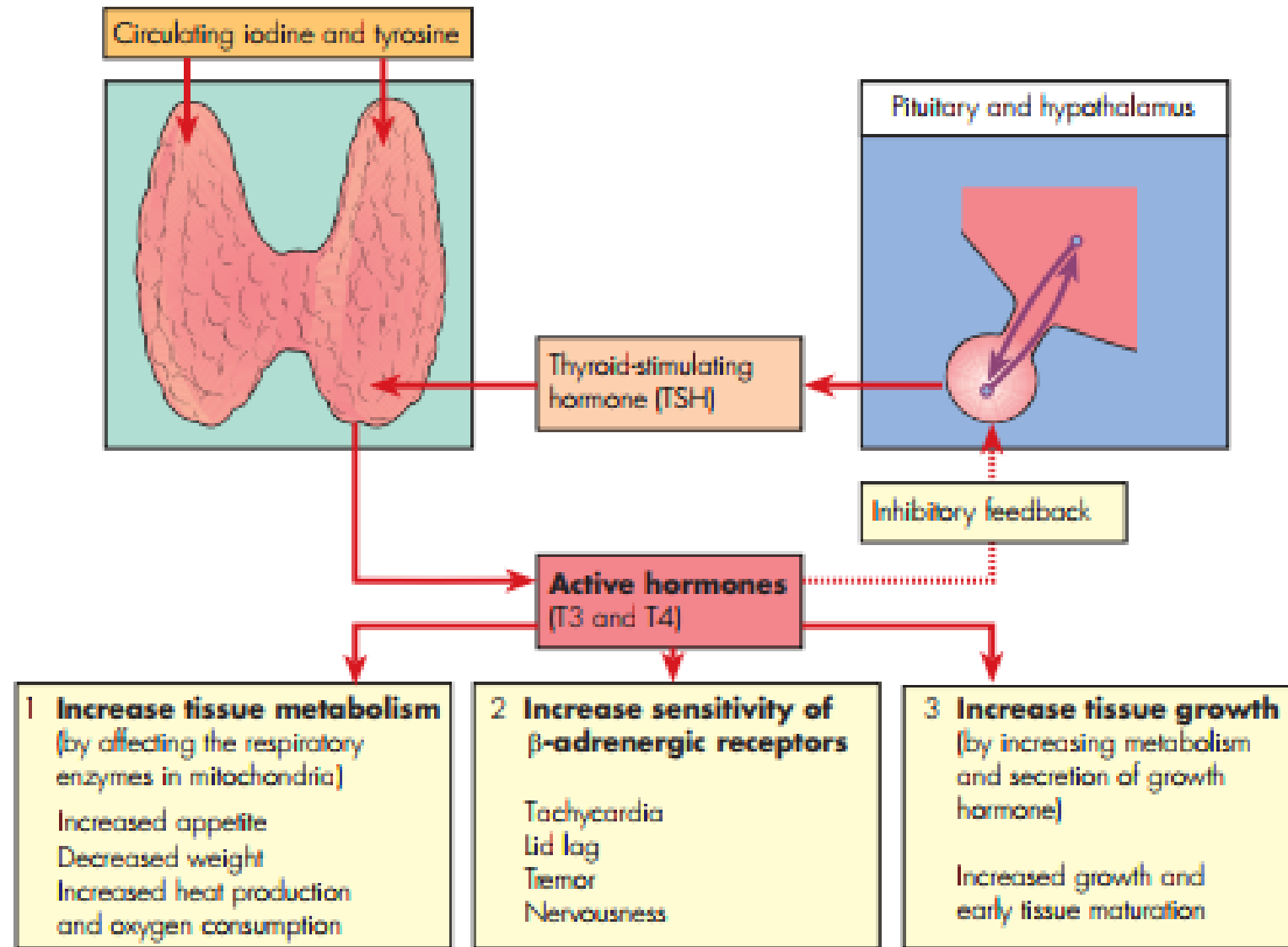
Cricoid cartilage

1st tracheal ring

Isthmus } of thyroid  
gland

Lobes }

## PHYSIOLOGY OF THE THYROID GLAND.



The active thyroid hormones are thyroxine (tetra-iodothyronine, T4) and probably tri-iodothyronine (T3)



## Hypothyroidism



Bradycardia



Brittle hair loss



Cold intolerance



Weight gain



Menstrual irregularity



Depression



Swelling



Sleep disorder



Low blood pressure



Headache

## Hyperthyroidism



Tachycardia



Thinning hair



Hot intolerance



Weight loss



Menstrual irregularity



Bulging eyes/  
photophobia



Tremor



Sleep disorder



High blood pressure



Enlarged thyroid  
gland

## Plan for the examination of a patient with a goitre

Look at the *whole patient* for agitation, nervousness or lethargy.

Examine the *hands* for sweating, tremor, tachycardia.

Examine the *eyes* for exophthalmos, lid lag, ophthalmoplegia, chemosis.

Examine the *neck*: always check that the lump moves with swallowing.

Palpate the *cervical lymph glands*.

## The eye signs of thyrotoxicosis

Lid retraction and lid lag

Exophthalmos, which also causes difficulty with convergence and absent forehead wrinkling when looking upwards

Ophthalmoplegia, particularly of the superior rectus and inferior oblique muscles (cannot look 'up and out')

Chemosis

**Normal**



Upper lid halfway between pupil and superior limbus

Lower lid at a tangent to inferior limbus

**Lid retraction**



Upper lid raised

Lower lid normal

N.B. This is not exophthalmos

**Exophthalmos**



Both lids moved away from centre with sclera visible below or all round the iris



- **Thyroid Inspection:**

- Inspect thyroid gland from front and side (scars, thyroid lumps and lymph nodes)
- ask patient to swallow glass of water and stick out tongue (looking for swelling)

- **Thyroid Palpation:**

- Ask if any pain before palpation
- Stand behind patient and correctly locate thyroid gland
- Use middle and index fingers of both hands to assess symmetry of thyroid gland lobes
  - If thyroid swelling ?global or unilateral
  - If thyroid lump(s) ?unilateral or multi-nodular
- Ask patient to drink glass of water and stick out tongue
- Check for palpable thrills
- Check for cervical lymphadenopathy

# Pemberton's sign

- - Tests the presence of latent pressure in the thoracic inlet
- - positive Pemberton's sign :facial congestion and cyanosis, as well as respiratory distress after 1 min.
- -Indicative of superior vena cava syndrome (SVC), commonly the result of a mediastinumal mass. Although the sign is most commonly described in patients with substernal goiters



A



B



C



- **Thyroid Percussion:**

- check for any thyroid gland enlargement
  - sternoclavicular edge to retrosternal area

- **Thyroid Auscultation:**

- listen for carotid bruits bilaterally

- **Extra considerations**

- check reflexes
- Proximal muscle weakness
- consider checking for cardiomegaly
- consider checking for pleural effusion and ascites
- check for pretibial swelling

